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Energy Engineering Analysis Program
Anniston Army Depot

EXECUTIVE SUMMARY

Prepared for:

US Army Corps of Engineers

Mobile District

Prepared by:

Science Applications Inc.

Huntsville, Alabama

DECEMBER 1984

DEPARTMENT OF THE ARMY
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ENERGY ENGINEERING ANALYSIS PROGRAM
STUDY REPORT

EXECUTIVE SUMMARY
FINAL REPORT

ANNISTON ARMY DEPOT
ANNISTON, ALABAMA

MOBILE DISTRICT
CORPS OF ENGINEERS

CONTRACT DACA01-83-C-0099

SAIC™

EXECUTIVE SUMMARY

This report presents the results of the Energy Engineering Analysis Program (EEAP) study (Increment F) conducted at the Anniston Army Depot, Anniston, Alabama by Science Applications, Incorporated (SAI) under Contract No. DACA01-83-C-0099. The report includes an analysis of energy conservation projects that can be accomplished using various Army funds, Post funds, and new management procedures. Also found in the report is a complete listing of recently implemented energy conservation projects, recommended similar future projects and a presentation of current and projected Post energy usage. The result of this analysis indicates that current energy use (FY 1983) can be reduced by 23 percent if these recommendations are adopted.

The energy use at Anniston Army Depot (AAD) in FY 1983 is shown Table 1. The total energy use in FY 1983 was 1,053,603 MBtu which is six percent more than the use of 993,189 MBtu for FY 1982.

The energy conservation measures evaluated by SAI under the Increment F scope of work are listed in Table 2. As shown in Table 3, ten projects are recommended for implementation as the result of this analysis. Three of these projects qualify for QRIP funding; the balance not qualifying for ECIP funds must be accomplished by Post O&M funds. Increments A, B, & G of the EEAP at Anniston Army Depot were performed by Day and Zimmermann, Inc. Day and Zimmermann, Inc. recommended five ECIP projects for implementation. These ECIP projects are listed in Table 4. Recommended changes in policy and procedure at AAD for reduced energy use include:

- Providing additional manpower to maintain the steam and condensate distribution systems; and
- Replacing standard electric motors and fluorescent lamps with high energy efficient ones at time of burn-out.

The energy use of the Post is expected to increase by approximately 5,100 MBtu due to constructing 10,000 square feet of new building area. The outlook

TABLE 1. ANNUAL ENERGY USE, FY 1983

Energy Source	Annual Energy Use Individual Units	Annual Energy Use MBtu	Annual Energy Cost $(000)
Electricity		601,806	2,714
L.P. Gas		10,139	65
Natural Gas		97	1
Fuel Oil (No. 2)		79,482	942
Coal		362,079	869
Total		1,053,603	4,591

Table 2. ENERGY CONSERVATION MEASURES INVESTIGATED

PROJECT DESCRIPTION	REMARKS
HVAC	
1. Install chilled water optimization control on central chillers Building 7 Building 363 Building 362	- Evaluated for Building No. 7 and 363; - Not feasible in Building No. 362 at present time due to operational problems in data processing areas.
2. Install economizer controls on central air handling systems Building 7 Building 363	- Building No. 7 presently has this type control system - Not feasible in Building No. 363 due to added cost of exhaust/ relief and outside air sysems.
3. Install night setback, on-off controls	- Project is presently programmed for FY 86.
4. Heat recovery from building exhaust air stream. (Air/air) - General building list	- In all buildings observed this is not feasible: (1) Low space temperature requirements; (2) Lack of central forced air make-up system; (3) Low exhausted air.
5. Heat recovery of central refrigeration equipment Building 363 Building 362 Building 7	- Evaluated for Building No. 363 for preheat of boiler make-up water - Not feasible in Building No. 362 due to lack of recovery need; - Not feasible in Building No. 7 due to lack of recovery need; - Not feasible in Building No. 114 (1) Temperature too low for process needs (2) Present central air system has heat recovery capabilities
6. Reduce Ventilation Building 114	- Evaluated for the supply and exhaust system.
7. Free Winter Cooling Building 363	- Evaluated for data processing air conditioning system.

Table 2. ENERGY CONSERVATION MEASURES INVESTIGATED (Continued)

PROJECT DESCRIPTION	REMARKS
PROCESS	
1. Heat recovery from process areas: - clean vats - steam drying ovens	- Buildings 409, 114, 130 contain steam heated vats in which heat recovery is evaluated (1) Exhaust air from vats; (2) Discharged condensate; - Buildings 409, 433, 130 contain steam drying oven in which no feasible heat recovery is possible; - Low volume exhaust air streams.
2. Blowdown heat recovery from boilers	- This is evaluated with the proposal for replacing existing turbine drives with electric motors. (Blowdown heat will used in place of turbine exhaust).
3. Install economizers on boilers (Building 401)	- Evaluated.
4. Install air preheaters on boilers (Building 401)	- Evaluated (except until No. 4).
CONTROLS	
1. Optimize start/stop of air compressors in Building 402	- Would not provide additional control of the system than is presently obtained by full time operators.
2. Reduction of operating compressed air pressure (Building 402)	- Not feasible due to process requirements.
3. Installation of oxygen trim controls on boilers in Building 401	- Evaluated.

Table 2. ENERGY CONSERVATION MEASURES INVESTIGATED (Continued)

PROJECT DESCRIPTION	REMARKS
UTILITY REPAIR	
1. Add steam line insulatio and repair condensate return lines	- Programmed in FY 86 or has been completed as F.E.P.
2. Steam trap repair and distribution maintenance	- Replacement and repairment of traps, values and fittings should be performed - Evaluated.
ELECTRICAL	
1. Replacement of inefficient lightings for various buildings	- Evaluated replacement of incadescent and mercury vapor lighting systems.
2. Install automatic dimming systems for existing fluorescent systems	- No application due to low existing lighting levels and high retrofit costs.
3. Replacement of existing motors with high efficiency type	- Evaluated.
4. Replacement of existing transformers with smaller sizes	- Existing excitation load on transformers does not appear to be excessive and savings could not offset replacement costs.
5. Power factor correction	- Capacitors interfere with Powerline Carrier System.
BUILDING ENVELOPE	
1. Wall insulation added	- Evaluated.
2. Add roof insulation	- Evaluated.
3. Reduction of window area	- Evaluated for Building 362.
4. Insulated (storm) windows	- No application.
5. Insulate doors	- Evaluated.

Table 2. ENERGY CONSERVATION MEASURES INVESTIGATED

PROJECT DESCRIPTION	REMARKS
BUILDING ENVELOPE (Continued)	
6. Vestibules	- No application.
7. Strip doors	- Evaluated.
8. Weatherstripping	- No application.

Table 3. ENERGY CONSERVATION PROJECTS EVALUATED UNDER INCREMENT F

PROJECT NAME	PROJECT COST ($)	MAN-HOURS	ENERGY SAVINGS (MBTU/YR) ELECTRICITY	FUEL OIL	COAL	ANNUAL SAVINGS ($)	SIMPLE PAYBACK (YRS)	SIR	PROJECT TYPE
Steam System Repair	38,200	490	--	--	67,466	142,000	0.3	38.1	QRIP
Return Condensate BuildingS 114 and 409	22,300	118	--	--	9,200	19,100	1.2	13.3	QRIP
Reduce Ventilation Building 114	151,700	2,325	23,120	--	8,610	120,000	1.3	9.0	QRIP
Fluorescent Dimmers Building 105	17,700	99	1,460	--	--	5,800	3.0	3.8	O&M
Replace Incandescent Lamps with H.P. Sodium	10,600	31	600	--	--	3,000	3.5	2.7	O&M
Add Roof Insulation Building 5	44,600	924	--	1,330	--	9,900	4.5	2.6	O&M
Oxygen Trim Controls Boiler Plant 401	89,100	200	--	--	6,520	5,600	16.0	1.7	O&M
Winter Cooling System Building 363	45,200	174	1,583	--	--	5,500	8.2	1.5	O&M
Building 363 Refrigeration Heat Recovery	4,200	45	130	--	--	500	8.1	1.5	O&M
Install Boiler Air Preheater	175,500	980	0	0	4,470	9,100	19.3	0.8	*
Total of Recommended Projects	599,100	5,386	26,893	1,330	96,266	320,500	--	--	--
Reduce Window Area Building 362	4.75/s.f.		--	0.04/s.f.	--	0.30/s.f.	15.8	0.8	NR**
Replace Mercury Vapor Light with High Pressure Sodium, Building 433	77,400		1,120	--	--	4,680	16.5	0.7	NR**
Chilled Water Optimization Building 7	14,700		140	--	--	610	24.0	0.5	NR**
Install Doors with Insulated Panels (12' x 12' door)	1,250/door		--	--	7	14	89.3	0.2	NR**
Strip Doors (16' x 16' Door)	2,600/door		--	71/door	--	108/door	N/A	N/A	NR**

*Recommended to be included in Boiler Baghouse project under construction
**Not Recommended

Table 4. SUMMARY OF RECOMMENDED PROJECTS FROM EEAP STUDY
INCREMENT A, B, AND G
(MODIFIED BY POST)

PROJECT NAME	PROJECTED ANNUAL PROJECT ENERGY SAVINGS MBTU	ESTIMATED PROJECT COST*	SIR (B/C RATIO)	ESTIMATED COMPLETION (FY)
1. Reduce windows 42 Buildings	9,018	243,400	3.65	1986
2. Upgrade district steam insulation - East End	11,600	210,400	3.1	1986
3. Relamp 57 Buildings	57,080	1,842,000	2.9	1986
4. Basewide EMCS	28,000	1,250,000	1.2	1992
5. Install two (2) regenerative dynamometers	11,149	853,400	1.01	1986
Total	116,847	4,399,200	--	

*Source: Installation Facilities, Energy Plan, FY 1983-1987, Anniston Army Depot

for near-term energy use if the building construction takes place and the recommended energy conservation projects are implemented is presented in Table 5. The current energy use will be reduced by 20 percent as the result of these actions.

The Increment F report is termed "Facility Engineer Conservation Measures" and it is intended to identify low cost conservation actions as well as large ECIP funded projects. The evaluation was essentially limited to high energy using buildings. Fourteen buildings were selected for field inspections. Based upon observations made in the field, ten cost-effective energy conservation projects were identified. These recommended projects are listed in Table 3. Also included in the report are recommended training courses for facility engineer personnel in energy conservation related topics.

Based on the above information, the energy use in the next three years will vary as shown in Table 5. The estimated energy use reduction by FY 1985 is 11 percent of FY 1983 use. This equates to an energy usage of 450,000 Btu per square foot of floor area. When all identified energy conservation projects are implemented an estimated energy use reduction of 23 percent will result based on FY 1983 use values.

Table 5. LONG RANGE ENERGY PLAN

TIME PERIOD	ACTION	IMPACT ON ANNUAL ENERGY USE	RESULTING ANNUAL ENERGY USE	PERCENT CHANGE FROM FY 1983
FY 1983	Energy Use	--	1,053,506	--
FY 1985	QRIP Projects	(108,396)		
	Increment F O&M - Installation Funded	(16,093)		
	New Construction (10,000 square feet)	5,130		
	Subtotal	(119,359)	934,147	(11.3)
FY 1986	OMA Project	(2,000)	932,147	(0.2)
FY 1987	ECIP Projects	(88,847)	843,300	(8.4)
Total Project Savings		(210,206)	843,300	(20.0)

ENERGY ENGINEERING ANALYSIS PROGRAM
STUDY REPORT

EXECUTIVE SUMMARY
FINAL REPORT

ANNISTON ARMY DEPOT
ANNISTON, ALABAMA

MOBILE DISTRICT
CORPS OF ENGINEERS

CONTRACT DACA01-80-C-0097
JUNE 1982

DAY & ZIMMERMANN, INC.

EXECUTIVE SUMMARY

This is a summary of the Energy Engineering Analysis performed for the Anniston Army Depot (ANAD) in Anniston, Alabama. It includes recommendations to be considered in the development of a Basewide Energy Plan, consisting of energy conservation projects and other recommendations for reduction of the installation's 1985 source energy consumption.

Anniston Army Depot is located in Northeastern Alabama, approximately 10 miles west of the City of Anniston. The Depot is the largest combat vehicle rebuilding facility in the free world. The eastern part of the property is gently rolling land, while the western part is hilly with some steep slopes. The Coosa River Storage Annex is operated as part of the Depot, with land ranging from gently rolling to mountainous.

This summary presents data on:

- Historical and predicted energy consumption
- Energy conservation procedures for distribution systems
- Energy conservation procedures for buildings and processes
- Utilization of energy monitoring and control systems (EMCS)
- Utilization of wood biomass and waste fuels
- Cogeneration and Replacement Boilers

The conservation of energy in existing facilities can be accomplished in the following two ways:

- Reduce the basic system energy requirements and source energy use
- Recover energy discharged from one user and utilize this waste energy for other purposes

A reduction in system energy requirements is represented by such activities as lowering equipment operating temperatures, reduction of transmission losses by better insulation, and night/weekend setback or shutdown of energy users and associated distribution systems.

Recovery of energy discharged by one user and utilization of this waste energy for other purposes is demonstrated by such activities as returning condensate to boiler systems and recovery of heat from process exhaust air systems to preheat replacement air. Examples of energy below the level of practical utilization are exhaust flue gases from boilers (cooled to near the dew point), and air exhausted from buildings near ambient temperature conditions.

This study has been directed towards identifying means of energy conservation conforming to those two methods identified as reduction in overall use and recovery of waste energy. Although the above discussion may appear to be confined to heat energy, investigations covered electrical usage, water usage, compressed air, wood biomass and solar energy.

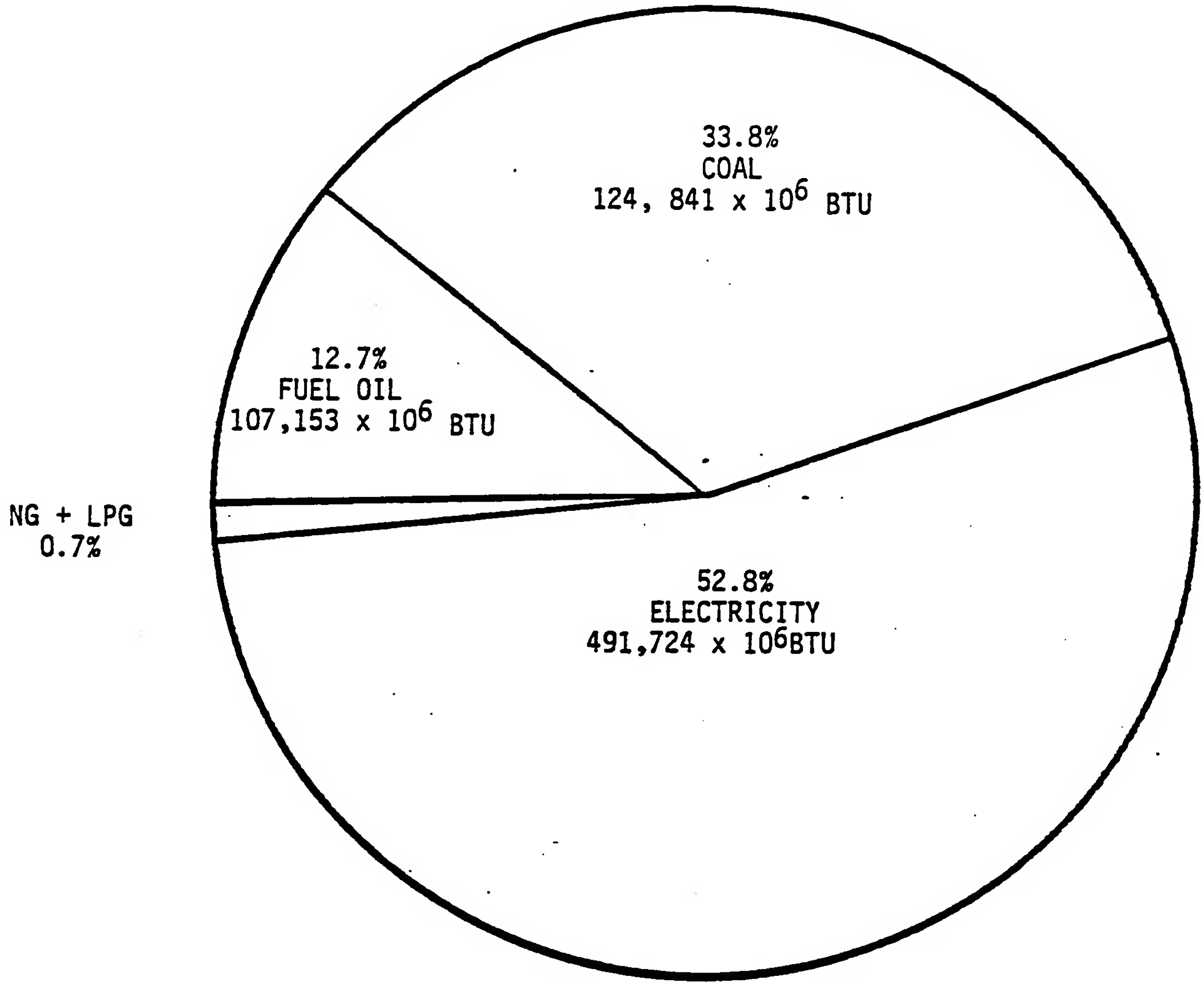
The number and type of viable ECIP funded projects has been restricted by direction of the COE, Mobile to those which qualify at an Energy/Cost ratio of 13 or greater for fiscal year 1985, and which exceed a Capital Cost Value of $100,000. The total energy savings presented in this report can be obtained only upon full implementation of the viable ECIP projects, compliance with the recommended conservation measures requiring capital investments less than $100,000, and those measures requiring policy changes at the management level.

Computer simulations of building energy use were modeled using the DOE-2.1 program. Computer simulations for energy utilization were performed on typical building types. Categorizing and prototyping methodology followed procedures outlined in the Black & Veatch Study "Engineering Instructions for Preparation of a Basewide Energy Systems Plan", dated January 1980. After careful examination of the ANAD facilities during field surveys, taking into consideration the building construction, building functions, and plant operating procedures, a total of 13 typical buildings were computer modeled to determine their energy use, both thermal and electrical, and to verify recorded historical energy consumption figures during the base year 1975. The final analysis resulted in a correlation which was within 2 percent of recorded consumption figures.

Energy conservation projects were generated from the energy model for conservation measures involving building insulation, reduction in fenestration area, temperature controls installation, relighting with energy-efficient fixtures, and a basewide EMCS. A detailed analysis is provided in the main report.

The following is a tabulation of the ANAD source energy consumption for the fiscal year ending September 1980.

Electricity	$491,724 \times 10^6$ BTU
Fuel Oil No. 2	$118,343 \times 10^6$ BTU
Coal	$314,058 \times 10^6$ BTU
Natural Gas	78.6×10^6 BTU
LPG	$6,275.8 \times 10^6$ BTU
Total	930,480 Mega BTU



BASEWIDE CONSUMPTION FY-80

TOTAL 930,480 x 10^6 BTU

FIGURE 1

This yields a total of 930,480 Mega BTU's for FY-80 (see Figure 1). It is reported that operations during this period were at the normal production level for this facility.

Figure 2 shows the historical and predicted annual energy consumption for a ten-year period through fiscal year 1986, reflecting the effect of proposed conservation measures.

It was determined that the fuel consumption rate for this facility is partially weather-dependent. Since about 43% of the steam generated in the boilers is consumed in process operations, the remainder is therefore consumed in building heating and transmission line losses getting the steam to the buildings. Figure 3 shows the monthly fuel consumption for fiscal year 1980. Note the peaks during the cold winter months.

Figure 4 shows the basewide electrical consumption for the past three fiscal years. Recent annual consumption shows a slight decline due to the shaving of peaks in cold winter months, while the average yearly consumption remains relatively constant between 42 and 43 million kilowatt hours. It is apparent the peaks have been reduced as a result of an Executive Order prohibiting supplemental electrical heating units where a building already contains a main source of heat.

Production levels in the near future can be expected to remain the same as for fiscal year 1980. Therefore, assuming similar weather conditions for the Anniston Area, future fuel consumption on a short term basis should remain relatively constant.

PROJECTED ENERGY CONSUMPTION
ANNISTON ARMY DEPOT
BASEWIDE FUEL & ELECTRIC

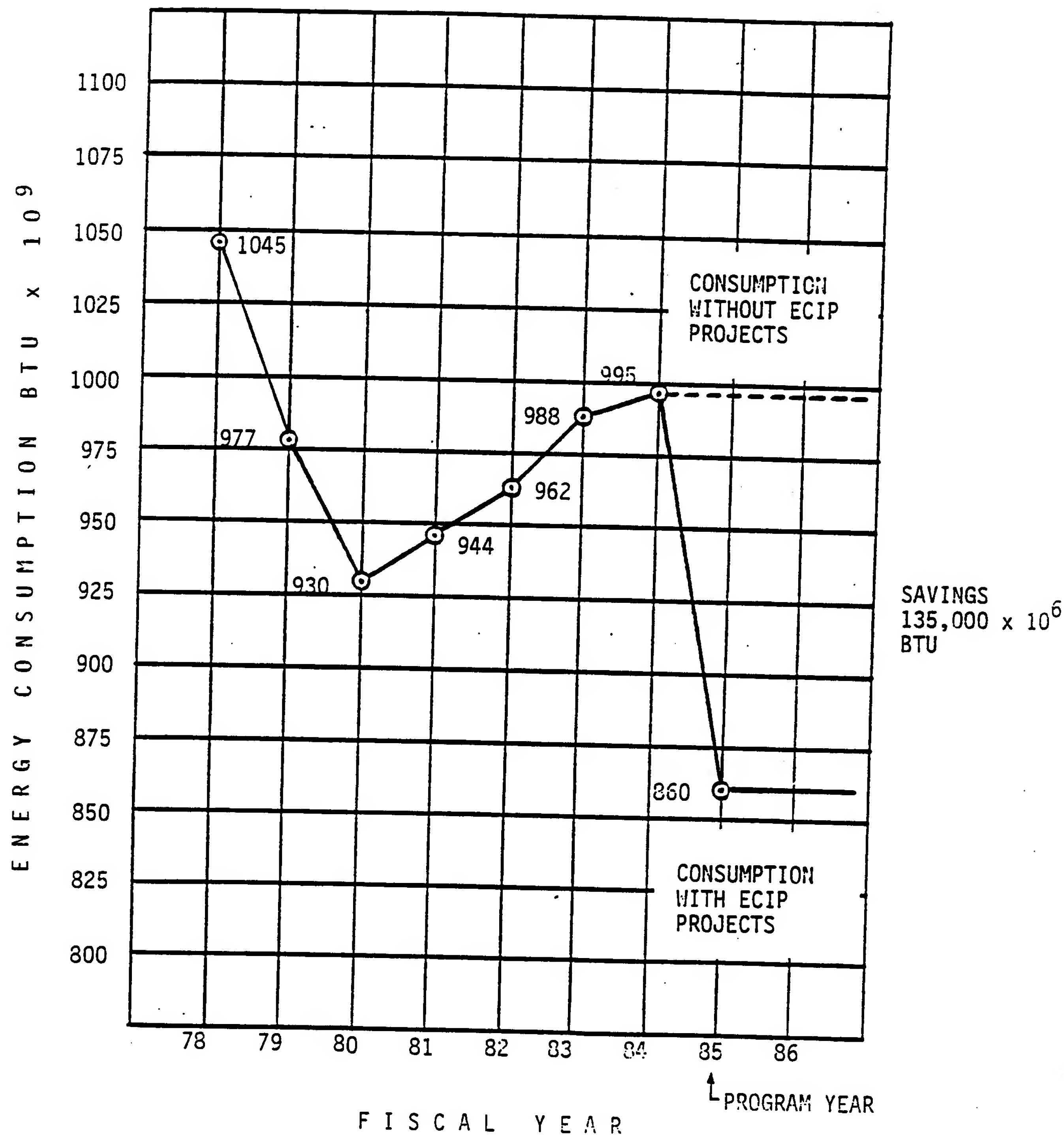


FIGURE 2

BASEWIDE FUEL CONSUMPTION
ANNISTON ARMY DEPOT FY-80

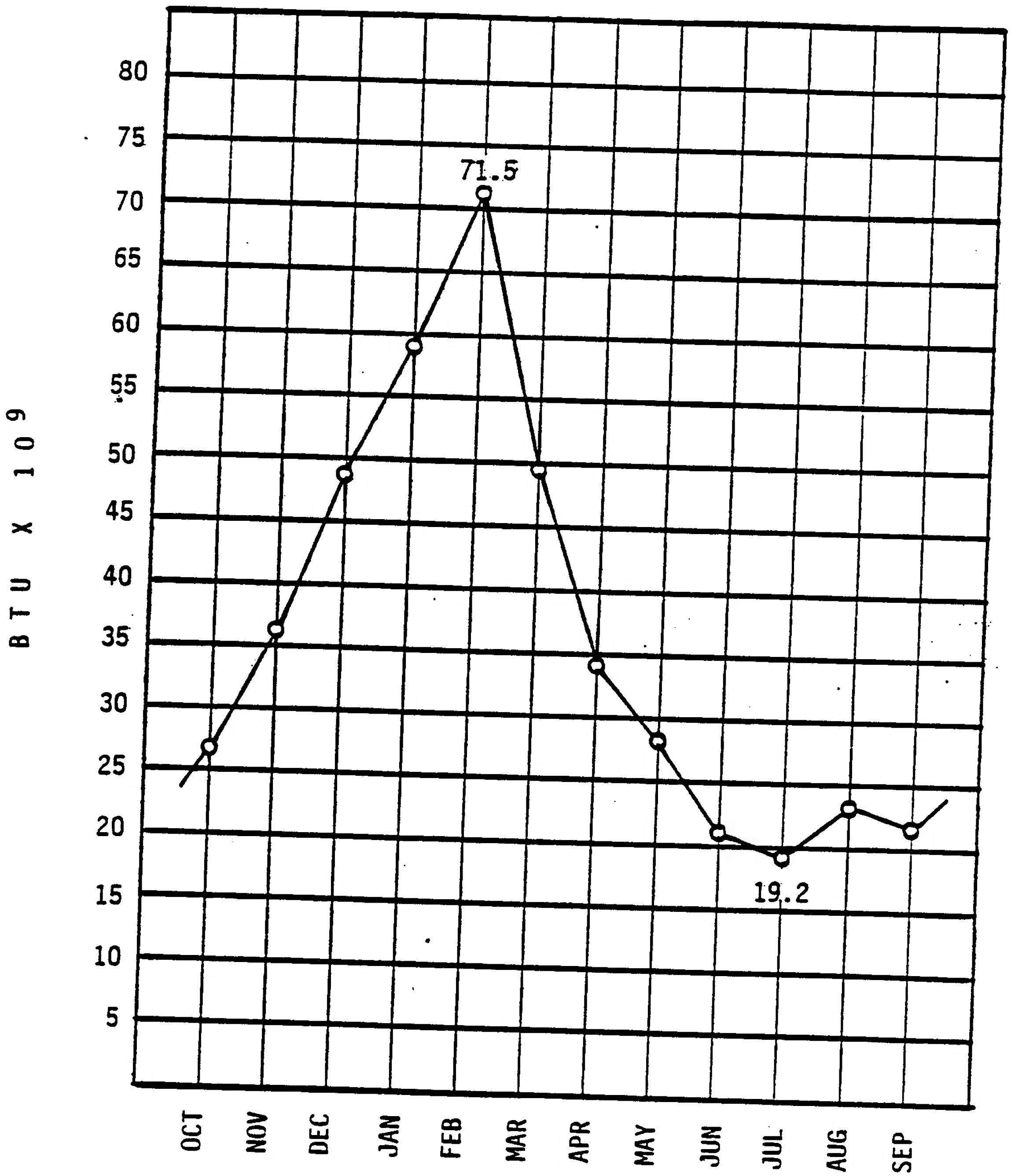


FIGURE 3

ANNISTON ARMY DEPOT ELECTRICAL LOAD

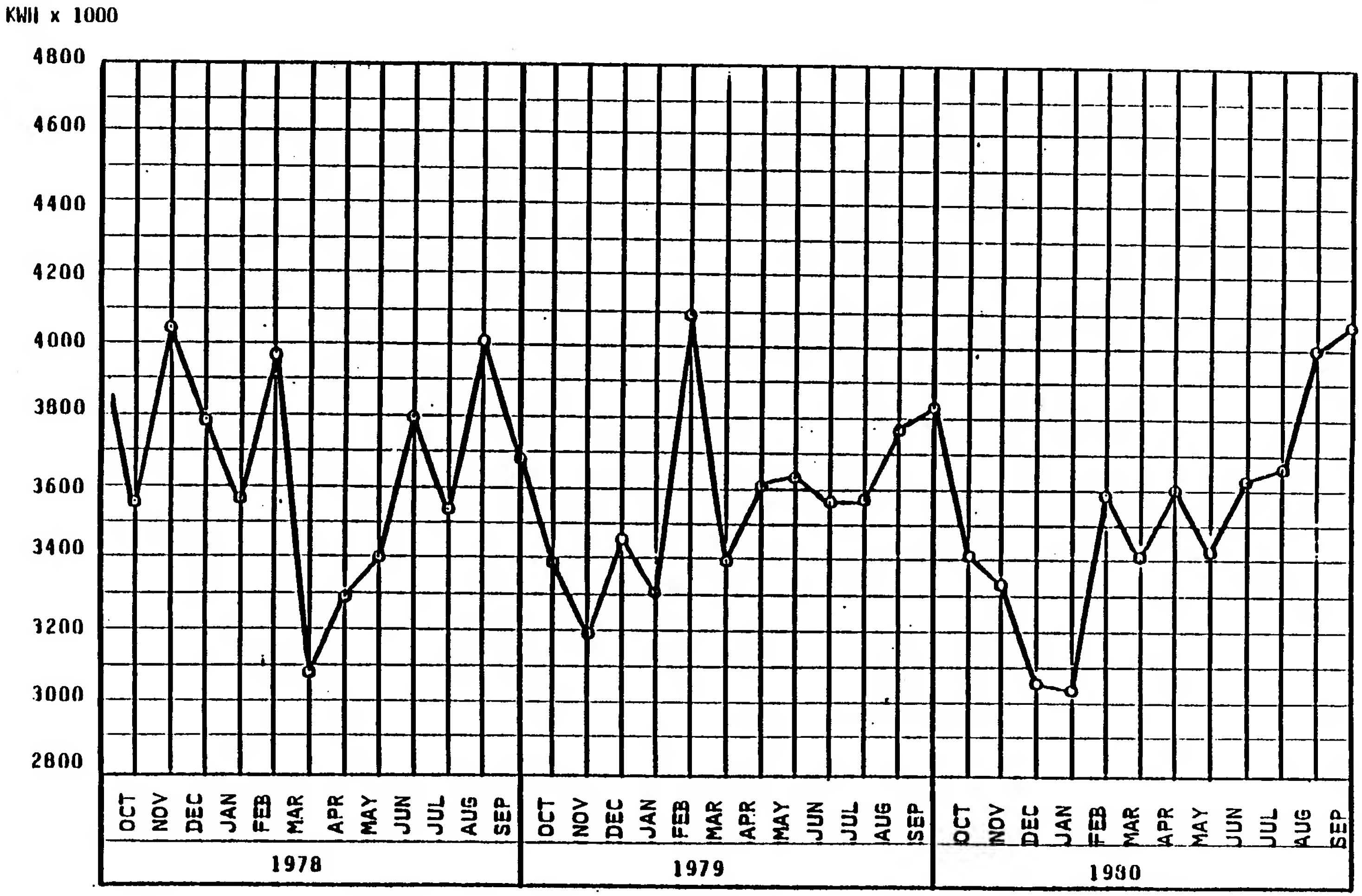


FIGURE 4

The projected basewide energy costs through fiscal year 1986 are shown on Figure 5. Projections are made for the facility if operated in its 1980 mode plus proposed steam load increases. Predicted costs resulting from the anticipated energy savings from implementation of all energy conservation projects and recommendations in FY-85 are shown by the solid line graph. The following escalation rates were used for calculation purposes:

Fuel Oil:	1.14 (14%)
Coal:	1.10 (10%)
Electricity:	1.13 (13%)

A total of 13.6% or 135,000 Mega BTU can be saved annually upon implementation of all viable ECIP projects and energy conservation recommendations determined by this study. Figure 6 shows the total source energy reduction. Further breakdown of the total savings yields the following:

Fuel Oil:	5,290 x 10^6 BTU saved
Coal:	30,290 x 10^6 BTU saved
Electricity:	99,230 x 10^6 BTU saved

Projects for source energy reduction are listed in Table 1 with their corresponding E/C ratio. Table A-1 contains projects not qualifying for ECIP funding, requiring less than $100,000 capital expenditure, but which are considered to be good energy-saving measures. (See Appendix A of this summary.)

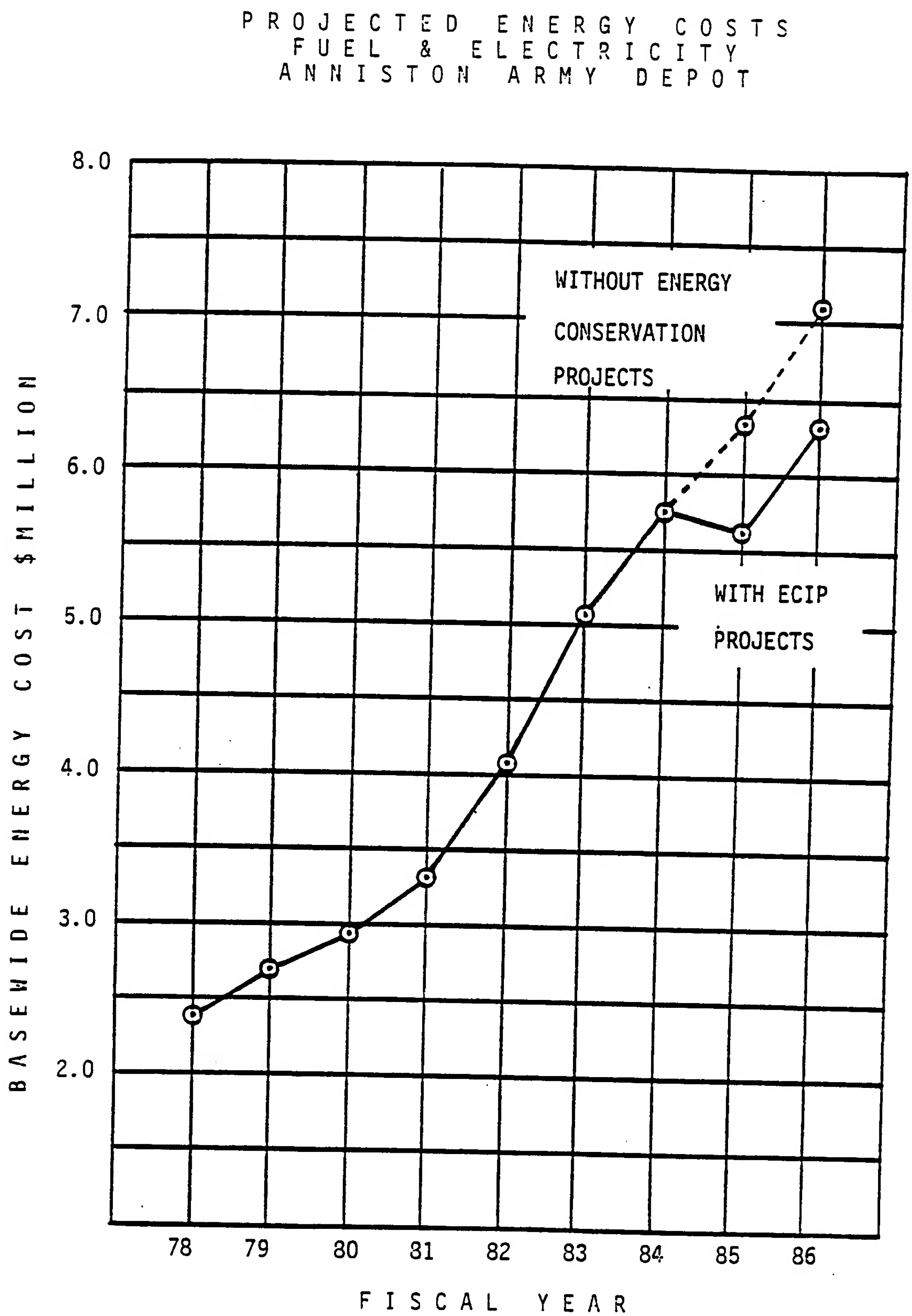
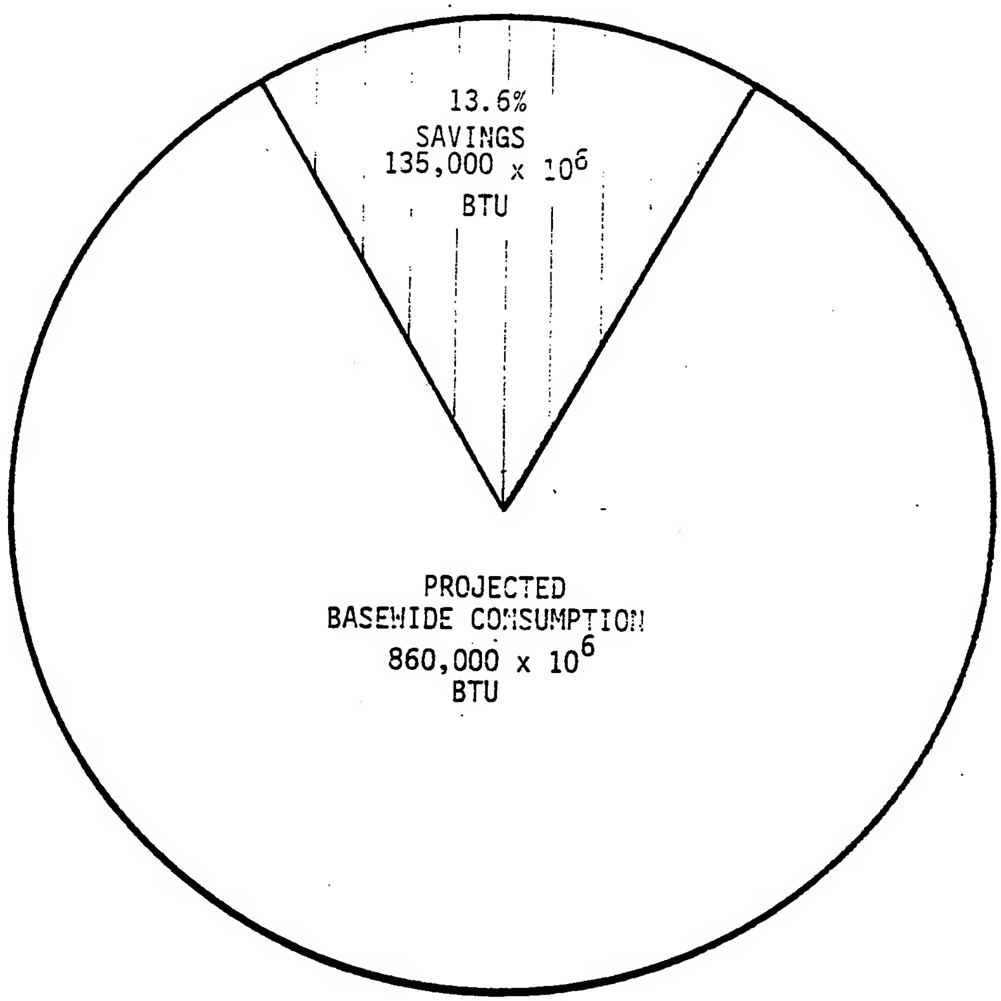

PROJECTED ENERGY COSTS
FUEL & ELECTRICITY
ANNISTON ARMY DEPOT
BASEWIDE ENERGY COST $MILLION
8.0
7.0
6.0
5.0
4.0
3.0
2.0
WITHOUT ENERGY CONSERVATION PROJECTS
WITH ECIP PROJECTS
78
79
80
81
82
83
84
85
86
FISCAL YEAR

FIGURE 5



BASEWIDE ENERGY CONSUMPTION
FY-85
AFTER ECIP PROJECTS

FIGURE 6

Further explanation of the historical energy consumption, basewide energy model, and energy conservation analysis can be found in the Energy Use Survey. The analysis for control schemes and basewide EMCS applications is included in the report on Energy Monitoring and Control Systems.

The composite total in energy reduction for building improvement projects is not a simple algebraic summation of individual project's energy savings. Due to synergistic effects, the composite total savings are approximately 85% of the simple sum. Consideration must be given to these synergistic effects when arriving at energy savings using different combinations of energy conservation projects.

The addition of simple temperature controls or the installation of a basewide EMCS essentially accounts for the same block of energy to be saved. One or the other must be chosen, and thus the energy savings can only be taken credit for one time. Although the initial cost is greater to install the EMCS, it does have a decided advantage over the simpler temperature controls arrangement due to its inherent ability to monitor and report out of state operating conditions. This discourages tampering by personnel and ultimately guarantees energy savings, provided the system is properly installed and maintained.

ECIP PROJECT SUMMARY

ANNISTON ARMY DEPOT

PROJECT TITLE	PROJECT NUMBER	COST $1000	ENERGY SAVED MEGA BTU ELEC.	OIL	COAL	DB/C	E/C	PB YEARS
Temperature Controls - 83 Buildings	M-204	325.9	8008.1	3790.2	15276.1	5.34	87.5	1.98
Upgrade District Steam Insulation - East End	A-10	209.9	-	-	11600	3.1	61.3	4.3
Relight 61 Buildings	M-206	2079.2	77263.6	-	-	2.9	39.0	3.8
Decrease Windows 53 Buildings	M-203	374.1	4652.3	2437.7	6008.6	3.65	38.4	4.27
Basewide EMCS - 83 Buildings	M-205	1185.1	8008.1	3790.2	15376.1	1.20	24.0	10.0
Install (2) Regenerative Dynamometers	A-3	851.1	11207	-	-	1.01	14.5	10.2

TABLE 1

A detailed study of the utilization of Biomass material from the 14,000 acre Anniston Site as an energy source was conducted. This study indicated that it would take 20 to 25 years to develop woodlands capable of maintaining a reasonably uniform level of Biomass material. However, there is opposition to increasing the amount of woodlands at ANAD for security reasons which prevents production of enough wood capable of generating the steam required by this facility.

At present, wood biomass would be a more expensive fuel than coal or oil at Anniston Army Depot. Due to the high moisture content of wood and handling expenses, the cost of burning wood grown on site would be about 1.7 times that of coal per BTU equivalent.

However, since there already exists a Forestry Program which involves the regular removal of timber, any wood which is not of sawtimber quality may be utilized in the following ways:

- used as a fuel at ANAD
- sold to pulp mills
- separated, using the low quality wood for fuel at Anniston and selling the high quality wood to pulp mills.

A complete analysis on the burning of wood materials is presented in the Biomass Survey section of the report.

An analysis was performed for the application of central boiler plants as a method of meeting the projected growth in steam demand as established in the ANAD Master Plan. It was determined that under present levels of summer steam demand, the installation of

cogeneration equipment was not economical, making a life cycle cost analysis (LCC) of this alternative a meaningless calculation. The final recommendations suggest the installation of new coal fired steam generators at a location in the east end of the depot. We recommend the installation of (3) - 30,000 lbs./hr. boilers, one at a time, at convenient intervals based on anticipated steam demand increases from the present time through the year 1988. Details of the study are presented in the section on Central Boiler Plants.

APPENDIX A

POTENTIAL CONSERVATION MEASURES

TABLE A-1

POTENTIAL CONSERVATION MEASURES REQUIRING CAPITAL INVESTMENT

Project Studied	Comments
1. Insulate walls of chemical cleaning tanks	Good Project
2. Install retractable covers on chemical cleaning tanks	Good Project
3. Install boiler economizers, oxygen trim controls, blowdown heat reclaim devices, etc.	Viable for process loads; short heating season does not justify capital cost of retrofit
4. Reset outside air dampers to minimum requirements of ASHRAE 62-73	Good project; very limited application
5. Add floor, ceiling, and wall insulation	This is a viable project for specific buildings only
6. Install storm windows	Limited applications to non-industrial structures
7. Install solar shading devices: - Solar window film - Solar screens - Overhangs - Awnings	Solar energy currently provides assistance to building heating in some buildings with significant window area
8. Weatherstrip doors	Limited applications to non-industrial structures
9. Install vestibules around high traffic doors	This project has limited application due to size of vehicles
10. Install setback temperature controls	Good Project
11. Install regenerative engine	Good Project
12. Reduce glass area by adding insulated panels	Good Project

POTENTIAL CONSERVATION MEASURES REQUIRING CAPITAL INVESTMENT
(Continued)

Project Studied	Comments
13. Install flue dampers, smaller jets, dual burners, electronic ignition, etc. in small furnaces	Short heating season does not justify capital cost of retrofit
14. Replace manual control valves or install temperature regulators in cast-iron radiators	Not cost effective where central controls are recommended
15. Replace existing coal boilers with gas/oil conversion kits with modern packaged boilers	This project does not meet the criteria
16. Replace incandescent lighting with higher efficiency lighting systems	Good Project
17. Install photocell lighting controls	This project has limited application
18. Replace existing motors with motors of the high efficiency type	There is an engineering disagreement concerning this project particularly where large older motors are involved
19. Reduce lighting levels to minimum standards	Limited application - many facilities are below minimum standards
20. Install water closet tank inserts, flow reducing shower heads, or other water conserving devices to reduce pumping energy consumption	Limited Application
21. Insulate existing steam lines	Good Project
22. Revise existing chilled water/ hot water pumping schemes to more efficient methods	N/A
23. Deactivate individual room thermostats in barracks and install temperature reset controls on chilled and hot water	N/A
24. Shut down steam plants in the summer and satisfy process steam needs with electric boilers	N/A

POTENTIAL CONSERVATION MEASURES REQUIRING CAPITAL INVESTMENT
(Continued)

	Project Studied	Comments
25.	Install infrared heating in warehouses, hangars, and shops	This project does not meet the criteria due to short heating duty cycles
26.	Install economizer systems for "free cooling" in intermediate seasons	This project does not meet the criteria in retrofit applications
27.	Modify multizone systems to include hot/cold deck reset	N/A
28.	Modify cooling tower systems to cycle fan with load and/or install bypass valving	N/A
29.	Install load-shedding system to minimize demand charges	N/A
30.	Correct power factor	This project does not meet the criteria
31.	Install chilled and hot water reset controls	N/A
32.	Install FM radio control system	N/A
33.	Replace existing windows with insulating panels	Very limited application
34.	Insulate temporary buildings	N/A
35.	Upgrade electrical distribution voltage	N/A
36.	Install total or selective energy plants	This project does not meet the criteria
37.	Install energy monitoring and control system (EMCS)	Good Project
38.	Install heat reclaim devices on air-cooled condensers	Limited Application
39.	Replace remotely located absorption chillers with more efficient electric-driven chillers	N/A
40.	Install solid waste-burning boilers	This project does not meet the criteria

POTENTIAL CONSERVATION MEASURES REQUIRING CAPITAL INVESTMENT
(Continued)

Project Studied	Comments
41. Install trailer enclosing devices at loading docks	This project has limited additional application
42. Install solar energy systems where feasible	This project does not meet the criteria
43. Install air-to-air heat reclaim devices in high exhaust areas, such as messhall kitchens	This project does not meet the criteria

TABLE A-2

POTENTIAL CONSERVATION MEASURES REQUIRING POLICY CHANGES AT INSTALLATION LEVEL

	Project Studied	Comments
1.	Replace domestic water heaters with higher efficiency models as replacement is required.	Good Project
2.	Shut down steam boilers and branch lines in summer	Currently Practiced
3.	Reduce domestic hot water temperatures from 140^{o}F to 110-120^{o}F	Good Project
4.	Replace electric motors with motors of the high efficiency type on replacement basis	Good project, limited application due to motor frame sizes of older equipment
5.	Use task lighting	Currently Practiced
6.	Install temporary 4-mil plastic storm windows	Good Project
7.	Shut down HVAC and DHW systems in unoccupied buildings	Currently Practiced
8.	Calk cracks on self-help basis	Good Project
9.	Install high-efficiency transformers on replacement basis	Good project - recommend replacement of all oversized transformers
10.	Enforce indoor space temperature regulations	Good Project
11.	Repair steam and condensate leaks	Good Project
12.	Repair air leakage in ducts	N/A
13.	Turn pilot lights for heating equipment off for the summer	Good project
14.	Replace air-conditioning units with high efficiency models as replacement is required	Good project

APPENDIX B

BUILDING DATA

INDEX

APPENDIX B

TABLE 1

Prototype/Computer Simulated			
Category Code	AAD Bldg. No.	Function	Similar Buildings
A-1-E	7	Headquarters	None
A-1-E	53	Security	None
A-1-E W-1-E	362	Office Warehouse	None
A-1-N	1	Office	2, 75, 220, 221, S-15, S-16, S-47, S-48, S-49, S-274
A-1-O	105	General Purpose	106, 363 (Air Condition area only)
A-1-O	140	Administration	100, 141, 502
M-1-E	501	Tank Repair Shop	None
M-1-N	21	Shop	3, 4, 5, 8, 9, 10, 19, 22, 27, 28 46, 55
M-2-N	54	Shipping	58, 59, 65, 87, 88, 171, 172, 380, 381, 600, 652, 654, 658, 669, 670, 673, 675, 676, 677, 680, 688, S-84
M-1-O	129	Small Arms Shop	104, 111-115, 127, 128, 130
M-1-O	143	Tank Repair Shop	107, 108, 117, 144, 146, 147, 402, 411, 421, 503, S-142
M-1-O	400	Tank Repair Shop	None
M-1-O	409	Vehicle Maint. Shop	410, 433

TABLE 1

LEGEND

Category Code	Building Type	HVAC System
A-1-E	Administration	- Permanent Air Condition-Oil-fired individual heating plant
A-1-N	Office	- Permanent Air Condition - Coal-fired individual heating plant
A-1-O	Administration	- Permanent Air condition - Coal-fired central boiler plant
M-1-E	Maintenance/Production	- Permanent Un-air condition - Oil-fired individual heating plant
M-1-N	Maintenance/Production	- Permanent Un-air condition - Coal-fired individual heating plant
M-2-N	Maintenance/Production	- Permanent Partially Air Condition - Coal-Fired individual heating plant
M-1-O	Maintenance/Production	- Permanent Un-air condition - Coal-fired central boiler plant
W-1-E	Warehouse	- Permanent Un-air condition - Oil-fired individual heating plant

TABLE 2

TYPICAL BUILDING ENERGY CONSUMPTION DATA

AAD

Group No.	Bldg.	Building Description	Annual Energy Source Consumption BTU x 10^6				Elec. Energy Consumption		Btu x 10^6 Sq. Ft.
			Fuel		Elec.	Total	KW Peak	KWH/Year	
			Coal	Oil					
A-1-E	7	Headquarters	-	2066.0	9,919.4	11,985.4	246.4	1,033,224	0.221
A-1-E	53	Security	-	548.3	7,146.8	7,695.1	262.9	663,371	0.257
A-1-E W-1-E	362	Office Warehouse	-	8861.6	14,987.8	23,849.4	488.7	2,055,983	0.098
A-1-N	1	Office	507.1	-	1,625.1	2,132.2	44.4	183,810	0.169
A-1-O	105	General Purpose	680.9	-	11,515.4	12,196.3	268.6	1,051,405	0.410
A-1-O	140	Administration	270.5	-	1,675.6	1,946.1	79.3	167,767	0.224
M-1-E	501	Tank Repair Shop	-	3125.5	2,739.3	5,864.8	103.7	505,586	0.096
M-1-N	21	Shop	896.1	-	4,385.3	5,281.4	62.3	455,293	0.322
M-2-N	54	Shipping	247.5	-	715.9	963.4	31.4	83,052	0.129
M-1-O	129	Small Arms Shop	2132.5	-	8,651.0	10,783.5	173.4	929,612	0.112
M-1-O	143	Tank Repair Shop	3122.2	-	3,398.7	6,520.9	128.7	562,147	0.071
M-1-O	400	Tank Repair Shop	7694.3	-	13,113.4	20,807.7	496.5	1,793,767	0.092
M-1-O	409	Vehicle Maint. Shop	924.8	-	1,454.3	2,379.1	55.1	205,095	0.043

TABLE 3

ANNISTON AD

AIR CHANGE RATES USED FOR INFILTRATION

BLDG. NO.	AS IS	INSUL. ROOF	INSUL. WALLS	REDUCE GLASS
1	3	-	-	2
7	1.5	-	-	-
21	4	3.5	3.5	3
53	3	-	-	2
54	4	-	3.5	3
104	4	-	3.5	-
105	1.5	-	-	-
129	3	2.5	2.5	2
140	3	-	-	2
143	7	6.5	6.5	6
362 (Office)	3	-	-	2
362 (Warehse)	5	4.5	4.5	4
400	7	6.5	6.5	6
409	5	-	-	-
501	5	-	-	-

TABLE 5

AAD

TABULATION - MONTHLY THERMAL COMPUTER ANALYSIS OUTPUT (MBTU) AS IS CONDITION

Bldg. No. East End	J	F	M	A	M	J	J	A	S	O	N	D	Total
104	218.1	217.2	165.4	5.5	0	0	0	0	0	11.2	33.5	127.6	778.5
105	169.9	177.4	134.5	19.1	0	0	0	0	0	21.5	41,9	116.6	680.9
129	597.7	597.4	453.1	15.0	0	0	0	0	0	30.7	91.6	349.0	2,132.5
140	70.4	67.1	57.7	5.5	0	0	0	0	0	7.0	16.8	46.0	270.5
143	837.9	812.2	613.1	28.9	0	0	0	0	0	78.6	162.0	589.7	3,122.3
400	2,124.6	2,048.3	1,564.5	62.4	0	0	0	0	0	152.9	361.1	1,380.5	7,694.3
409	261.7	254.8	195.5	2.4	0	0	0	0	0	8.9	29.7	161.8	924.8
Other East End Bldgs. 100,106,107,108, 111-115,117,127, 128,130,141,144, 146,147,402,410, 411,421,433,502, 503,S-142	4,938.3	4,867.8	3,715.3	159.1						337.9	853.7	3,118.5	17,990.6
TOTAL MBTU	9,218.6	9,040.1	6,899.1	297.9	0	0	0	0	0	648.7	1,600.3	5,889.7	33,594.4
Boiler/Bldg.Eff.	65	60	55	50	-	-	-	-	-	50	60	65	Avg.60.6
MBTU & Boiler	14,183	15,067	12,544	596	0	0	0	0	0	1,297	2,667	9,061	55,415
% Dev.	-19	-10	+274	-41	0	0	0	0	0	-29	-22	+17	+5

ADJ. 4 YEAR AVERAGE - RECORDED DATA (From Exhibit I)

Boiler MBTU	17,413	16,689	4,568	1,018	0	0	0	0	0	1,832	3,415	7,734	52,669

TABLE 5

ANNISTON ARMY DEPOT - East End | FUEL: Coal | BOILER EFFICIENCY: 60%

BLDG. NO.	COMP RUN BLDG	DECREASE IN MEGA BTUS															
		ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT² ROOF		THERMAL	ELECTRIC	PER FT² WALL		THERMAL	ELECTRIC	PER FT² GLASS		THERMAL	ELECTRIC	PER FT² FLOOR
105	105													29732	589.7	1511.6	.0706
106	105													29317	581.5	1489.3	.0706
TOTAL														59049	1171.2	3000.9	N/A

REMARKS:

ANNISTON ARMY DEPOT - East End | FUEL: Coal | BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT² ROOF		THERMAL	ELECTRIC	PER FT² WALL		THERMAL	ELECTRIC	PER FT² GLASS		THERMAL	ELECTRIC	PER FT² FLOOR
129	129	100557	1114.5		.0110	20132	399.6		.0198					96330	341.5		.0035
127	129	100557	1114.5		.0110	20132	399.6		.0198					96330	341.5		.0035
128	129	100557	1114.5		.0110	20132	399.6		.0198					96330	341.5		.0035
130	129	100557	1114.5		.0110	20132	399.6		.0198					96330	341.5		.0035
104	129	36777	405.0		.0109	7362	146.8		.0199					35227	123.5		.0035
111	129	14388	158.5		.0109	2880	57.5		.0199					13782	48.3		.0035
112	129	35551	391.6		.0109	7117	142.0		.0199					34053	119.1		.0035
113	129	35551	391.6		.0109	7117	142.0		.0199					34053	119.1		.0035
114	129	50383	554.8		.0114	10086	201.0		.0199					48260	168.8		.0034
115	129	2724	30.0		.0109	545	11.0		.0199					2609	9.2		.0035
TOTAL		577602	6389.5		N/A	115635	2298.7		N/A					555304	1954.0		N/A

REMARKS:

ANNISTON ARMY DEPOT - East End | FUEL: Coal | BOILER EFFICIENCY: 60%

		DECREASE IN MEGA BTUS															
		ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
			MEGA BTUS				MEGA BTUS				MEGA BTUS				MEGA BTUS		
BLDG. NO.	COMP RUN BLDG	ROOF AREA	THER-MAL	ELEC-TRIC	PER FT² ROOF	WALL AREA	THER-MAL	ELEC-TRIC	PER FT² WALL	GLASS AREA	THER-MAL	ELEC-TRIC	PER FT² GLASS	FLOOR AREA	THER-MAL	ELEC-TRIC	PER FT² FLOOR
140	140									248	84.5	204.0	1.163	8705	75.0	266.6	.0392
100	140									215	74.3	176.7	1.167	7549	65.5	231.0	.0392
141	140									322	111.1	264.2	1.165	11291	98.0	345.5	.0392
502	140									162	55.8	133.0	1.165	5682	49.2	173.9	.0392
TOTAL										947	325.7	777.9	N/A	33227	287.7	1017.0	N/A

REMARKS:

ANNISTON ARMY DEPOT - East End | FUEL: Coal | BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT^2 ROOF		THERMAL	ELECTRIC	PER FT^2 WALL		THERMAL	ELECTRIC	PER FT^2 GLASS		THERMAL	ELECTRIC	PER FT^2 FLOOR
143	143	95150	2023.3		.0212	55984	833.8		.0148	4320	*52.6		*.0121	91910	966.3		.0105
107	143	4493	93.6		.0208	2613	38.6		.0147	202	* 2.8		*.0140	4291	44.3		.0103
108	143	31653	660.1		.0208	18411	272.1		.0147	1421	*20.1		*.0141	30232	312.5		.0103
117	143	31653	660.1		.0208	18411	272.1		.0147	1421	*20.1		*.0141	30232	312.5		.0103
144	143	3539	73.8		.0218	2058	30.5		.0148	159	* 2.2		*.0136	3380	35.0		.0103
146	143	27871	581.6		.0208	16212	239.5		.0147	1251	*17.8		*.0142	26620	275.0		.0103
147	143	14668	305.8		.0208	8532	126.0		.0147	658	* 9.3		*.0141	14010	144.6		.0103
402	143	5437	113.3		.0208	3163	46.6		.0147	244	* 3.5		*.0143	5193	53.6		.0103
411	143	10551	220.0		.0208	6137	90.6		.0147	474	* 6.6		*.0140	10077	104.2		.0103
421	143	15077	314.5		.0208	8770	129.6		.0147	677	* 9.5		*.0140	14400	148.8		.0103
503	143	6194	129.2		.0208	3603	53.3		.0148	278	* 3.8		*.0137	5916	61.2		.0103
S-142	143	35278	735.6		.0208	20520	303.2		.0147	1584	*22.5		*.0142	33694	348.2		.0103
TOTAL		281564	5910.9		N/A	164414	2435.9		N/A	N/A	N/A		N/A	269955	2806.2		N/A

REMARKS: * Indicates Increase in MEGA BTUS and is not included in Projdct M-203.

ANNISTON ARMY DEPOT - East End | FUEL: Coal | BOILER EFFICIENCY: 60%

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION: ROOF AREA	ROOF INSULATION: MEGA BTUS THERMAL	ROOF INSULATION: MEGA BTUS ELECTRIC	ROOF INSULATION: MEGA BTUS PER FT² ROOF	WALL INSULATION: WALL AREA	WALL INSULATION: MEGA BTUS THERMAL	WALL INSULATION: MEGA BTUS ELECTRIC	WALL INSULATION: MEGA BTUS PER FT² WALL	DECREASE WINDOWS 50%: GLASS AREA	DECREASE WINDOWS 50%: MEGA BTUS THERMAL	DECREASE WINDOWS 50%: MEGA BTUS ELECTRIC	DECREASE WINDOWS 50%: MEGA BTUS PER FT² GLASS	TEMPERATURE CONTROL: FLOOR AREA	TEMPERATURE CONTROL: MEGA BTUS THERMAL	TEMPERATURE CONTROL: MEGA BTUS ELECTRIC	TEMPERATURE CONTROL: MEGA BTUS PER FT² FLOOR
400	400	226668	4718.5		.0208	93308	1350.1		.0144	21564	*311.8		*.0144	225667	2319.8		.0102
TOTAL		226668	4718.5		N/A	93308	1350.1		N/A	N/A	N/A		N/A	225667	2319.8		N/A

DECREASE IN MEGA BTUS

REMARKS: * Indicates Increase in MEGA BTUS and is not included in Project M-203.

ANNISTON ARMY DEPOT - East End FUEL: Coal BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT^2 ROOF		THERMAL	ELECTRIC	PER FT^2 WALL		THERMAL	ELECTRIC	PER FT^2 GLASS		THERMAL	ELECTRIC	PER FT^2 FLOOR
409	409													55060	131.3		.0023
410	409													27588	64.3		.0023
433	409													43200	100.8		.0023
TOTAL														125848	296.4		N/A

REMARKS:

ANNISTON ARMY DEPOT - East End

FUEL: #2 Oil

BOILER EFFICIENCY: 60%

		DECREASE IN MEGA BTUS															
		ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
			MEGA BTUS				MEGA BTUS				MEGA BTUS				MEGA BTUS		
BLDG. NO.	COMP RUN BLDG	ROOF AREA	THER-MAL	ELEC-TRIC	PER FT² ROOF	WALL AREA	THER-MAL	ELEC-TRIC	PER FT² WALL	GLASS AREA	THER-MAL	ELEC-TRIC	PER FT² GLASS	FLOOR AREA	THER-MAL	ELEC-TRIC	PER FT² FLOOR
501	501													61004	1071.5		.0175
TOTAL														61004	1071.5		N/A

REMARKS:

ANNISTON ARMY DEPOT - West End | FUEL: #2 OIL | BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THER-MAL	ELEC-TRIC	PER FT^2 ROOF		THER-MAL	ELEC-TRIC	PER FT^2 WALL		THER-MAL	ELEC-TRIC	PER FT^2 GLASS		THER-MAL	ELEC-TRIC	PER FT^2 FLOOR
7	7													54332	873.8	1130.6	.0368
TOTAL														54332	873.8	1130.6	N/A

REMARKS:

ANNISTON ARMY DEPOT - West End | FUEL: #2 Oil | BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT^2 ROOF		THERMAL	ELECTRIC	PER FT^2 WALL		THERMAL	ELECTRIC	PER FT^2 GLASS		THERMAL	ELECTRIC	PER FT^2 FLOOR
362	362									7160	2209.6	815.4	.4224	243760	1679.1	636.6	.0094
TOTAL										7160	2209.6	815.4	N/A	243760	1679.1	636.6	N/A

REMARKS:

ANNISTON ARMY DEPOT - West End   FUEL: #2 Oil   BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THER-MAL	ELEC-TRIC	PER FT^2 ROOF		THER-MAL	ELEC-TRIC	PER FT^2 WALL		THER-MAL	ELEC-TRIC	PER FT^2 GLASS		THER-MAL	ELEC-TRIC	PER FT^2 FLOOR
53	53									1660	228.1	567.8	.4794	30000	165.8	429.4	.0198
TOTAL										1660	228.1	567.8	N/A	30000	165.8	429.4	N/A

REMARKS:

ANNISTON ARMY DEPOT - West End | FUEL: Coal | BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT^2 ROOF		THERMAL	ELECTRIC	PER FT^2 WALL		THERMAL	ELECTRIC	PER FT^2 GLASS		THERMAL	ELECTRIC	PER FT^2 FLOOR
21	21	16640	425.2		.0255	9897	341.3		.0344	697	291.5		.4182	16384	293.5		.0179
3	21	865	22.2		.0256	515	17.7		.0343	36	15.2		.4213	852	15.3		.0179
4	21	14953	383.0		.0256	8898	306.8		.0344	626	262.7		.4195	14732	265.2		.0179
5	21	18244	467.3		.0256	10856	374.5		.0344	764	320.5		.4195	17974	323.5		.0179
8	21	1920	49.2		.0256	1143	39.5		.0345	80	33.8		.4229	1892	34.0		.0179
9	21	1920	49.2		.0256	1143	39.5		.0345	80	33.8		.4229	1892	34.0		.0179
10	21	6537	167.5		.0256	3890	134.1		.0344	274	114.8		.4190	6440	116.0		.0180
19	21	1726	44.2		.0255	1027	35.5		.0345	72	30.3		.4212	1700	30.7		.0180
22	21	41176	1054.7		.0256	24502	845.2		.0344	1724	723.5		.4196	40567	730.2		.0179
27	21	41176	1054.7		.0256	24502	845.2		.0344	1724	723.5		.4196	40567	730.2		.0179
28	21	41176	1054.7		.0256	24502	845.2		.0344	1724	723.5		.4196	40567	730.2		.0179
46	21	256	6.5		.0253	152	5.3		.0350	11	4.5		.4090	252	4.5		.0178
55	21	19234	492.8		.0256	11446	394.8		.0344	805	338.0		.4198	18950	341.2		.0180
TOTAL		205823	5271.2		N/A	122473	4224.6		N/A	8617	3615.6		N/A	202769	3648.5		N/A

REMARKS:

ANNISTON ARMY DEPOT - West End FUEL: Coal BOILER EFFICIENCY: 60%

DECREASE IN MEGA BTUS

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THERMAL	ELECTRIC	PER FT² ROOF		THERMAL	ELECTRIC	PER FT² WALL		THERMAL	ELECTRIC	PER FT² GLASS		THERMAL	ELECTRIC	PER FT² FLOOR
1	1									709	163.8	284.1	.6317	12608	154.1	191.3	.0273
2	1									590	136.8	237.1	.6337	10536	128.2	160.2	.0273
75	1									368	85.3	147.8	.6334	6567	79.8	99.8	.0273
220	1									333	77.5	134.0	.6351	5954	72.5	90.5	.0273
221	1									567	131.7	227.7	.6338	10121	123.2	153.8	.0273
S-15	1									252	58.5	101.3	.6341	4500	54.7	68.4	.0273
S-16	1									252	58.5	101.3	.6341	4500	54.7	68.4	.0273
S-47	1									864	200.5	347.8	.6346	15422	187.7	234.4	.0273
S-48	1									157	36.5	63.0	.6337	2800	34.2	42.5	.0273
S-49	1									320	74.3	128.7	.6343	5720	69.5	86.9	.0273
S-274	1									253	58.7	101.7	.6339	4518	55.0	68.7	.0273
TOTAL										4665	1082.1	1874.5	N/A	83246	1013.6	1264.9	N/A

REMARKS:

ANNISTON ARMY DEPOT - Restricted Area FUEL: Coal BOILER EFFICIENCY: 60%

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION: ROOF AREA	ROOF INSULATION: MEGA BTUS THER-MAL	ROOF INSULATION: MEGA BTUS ELEC-TRIC	ROOF INSULATION: PER FT² ROOF	WALL INSULATION: WALL AREA	WALL INSULATION: MEGA BTUS THER-MAL	WALL INSULATION: MEGA BTUS ELEC-TRIC	WALL INSULATION: PER FT² WALL	DECREASE WINDOWS 50%: GLASS AREA	DECREASE WINDOWS 50%: MEGA BTUS THER-MAL	DECREASE WINDOWS 50%: MEGA BTUS ELEC-TRIC	DECREASE WINDOWS 50%: PER FT² GLASS	TEMPERATURE CONTROL: FLOOR AREA	TEMPERATURE CONTROL: MEGA BTUS THER-MAL	TEMPERATURE CONTROL: MEGA BTUS ELEC-TRIC	TEMPERATURE CONTROL: PER FT² FLOOR
54	54					3971	90.3	12.1	.0257	575	67.3	26.2	.1626	7494	80.0	22.7	.0137
58	54					6889	156.0	20.8	.0256	995	117.0	45.5	.1633	12998	138.6	39.0	.0136
59	54					18899	427.8	57.0	.0256	2728	320.8	124.8	.1633	35659	380.3	106.9	.0136
65	54					2501	56.6	7.6	.0256	361	42.5	16.5	.1634	4718	50.3	14.2	.0136
87	54					1870	42.3	5.6	.0256	270	31.6	12.3	.1625	3528	37.7	10.6	.0136
88	54					2629	59.5	8.0	.0256	379	44.7	17.4	.1638	4960	53.0	14.9	.0136
171	54					848	19.2	2.6	.0257	122	14.3	5.6	.1631	1600	17.0	4.8	.0136
172	54					3124	70.7	9.5	.0256	451	53.0	20.7	.1634	5895	62.8	17.7	.0136
380	54					4841	109.5	14.6	.0256	699	82.2	32.0	.1633	9134	97.3	27.4	.0136
381	54					7726	175.0	23.3	.0256	1115	131.2	51.0	.1634	14578	155.5	43.7	.0136
600	54					5861	132.7	17.7	.0256	846	99.5	38.7	.1633	11059	117.8	33.1	.0136
652	54					5300	120.0	16.0	.0256	765	90.0	35.0	.1633	10000	106.6	30.0	.0136
654	54					6128	138.6	18.5	.0256	884	104.0	40.5	.1634	11562	123.3	34.7	.0136
658	54					1329	30.2	4.0	.0256	192	22.6	8.8	.1635	2508	26.8	7.5	.0136
669	54					1185	26.8	3.5	.0255	171	20.1	7.8	.1631	2236	23.8	6.7	.0136
670	54					2476	56.2	7.5	.0257	357	42.1	16.4	.1638	4672	49.8	14.0	.0136
673	54					414	9.5	1.3	.0260	60	7.0	2.7	.1616	781	8.3	2.4	.0137
675	54					290	6.7	0.8	.0258	42	5.0	1.9	.1642	547	5.8	1.6	.0135
SUBTOTAL						76281	1727.6	230.4	N/A	11012	1294.9	503.8	N/A	143929	1534.7	431.9	N/A

REMARKS:

Continued on Next Page

ANNISTON ARMY DEPOT - Restricted Area Continued FUEL: Coal

BOILER EFFICIENCY: 60%

BLDG. NO.	COMP RUN BLDG	ROOF INSULATION				WALL INSULATION				DECREASE WINDOWS 50%				TEMPERATURE CONTROL			
		ROOF AREA	MEGA BTUS			WALL AREA	MEGA BTUS			GLASS AREA	MEGA BTUS			FLOOR AREA	MEGA BTUS		
			THER-MAL	ELEC-TRIC	PER FT^2 ROOF		THER-MAL	ELEC-TRIC	PER FT^2 WALL		THER-MAL	ELEC-TRIC	PER FT^2 GLASS		THER-MAL	ELEC-TRIC	PER FT^2 FLOOR
SUBTOTAL FROM FIRST PAGE						76281	1727.6	230.4	N/A	11012	1294.9	503.8	N/A	143929	1534.7	431.9	N/A
676	54					414	9.5	1.3	.0260	60	7.0	2.7	.1616	781	8.3	2.4	.0137
677	54					526	11.8	1.6	.0254	76	8.8	3.4	.1605	992	10.5	2.9	.0135
680	54					12846	291.0	38.8	.0256	1854	218.2	84.8	.1634	24238	258.6	72.7	.0136
688	54					1534	34.6	4.7	.0256	221	26.0	10.2	.1638	2894	30.8	8.7	.0136
S-84	54					1781	40.3	5.4	.0256	257	30.3	11.8	.1638	3360	35.8	10.1	.0136
TOTAL						93382	2114.8	282.2	N/A	13480	1585.2	616.7	N/A	176194	1878.7	528.7	N/A

REMARKS:

ANNISTON ARMY AMMUNITION DEPOT - (EAST END)

BLDG. No.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
100	7,549	234.8	-	-	190.2	195.5	1453.2	-	-	1276.5	1222.2
BLDG. TOTALS/ []		.0311	-	-	.0252	.0259	.1925	-	-	.1691	.1691
104	35,227	778.5	535.5	690.4	-	704.5	3163.4	3163.4	3163.4	-	3163.4
BLDG. TOTALS/ []		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
105	29,732	680.9	-	-	-	327.1	11515.4	-	-	-	10003.8
BLDG. TOTALS/ []		.0229	-	-	-	.0110	.3873	-	-	-	.3365
106	29,317	671.4	-	-	-	322,5	11354,5	-	-	-	9865,2
BLDG. TOTALS/ []		.0229	-	-	-	.0110	.3873	-	-	-	.3365
107	4,291	145.5	89.3	122.3	147.2	118.9	158.8	158.8	158.8	158.8	158.8
BLDG. TOTALS/ []		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
108	30,232	1024.9	628.8	861.6	1037.0	837.4	1118.6	1118.6	1118.6	1118.6	1118.6
BLDG. TOTALS/ []		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
111	13,782	304.6	209.5	270.1	-	275.6	1237.6	1237.6	1237.6	-	1237.6
BLDG. TOTALS/ []		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
112	34,053	752.6	517.6	667.4	-	681.1	3058.0	3058.0	3058.0	-	3058.0
BLDG. TOTALS/ []		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
113	34,053	752.6	517.6	667.4	-	681.1	3058.0	3058.0	3058.0	-	3058.0
BLDG. TOTALS/ []		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
114	48,260	1066.5	733.6	945.9	-	965.2	4333.7	4333.7	4333.7	-	4333.7
BLDG. TOTALS/ []		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898

ANNISTON ARMY AMMUNITION DEPOT - (EAST END)

BLDG. No.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
115	2,609	57.7	39.7	51.1	-	52.2	234.3	234.3	234.3	-	234.3
BLDG. TOTALS/ ▯		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
117	30,232	1024.9	628.8	861.6	1037.0	837.4	1118.6	1118.6	1118.6	1118.6	1118.6
BLDG. TOTALS/ ▯		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
127	96,330	2132.5	1463.8	1892.7	-	1927.6	8651.0	8651.0	8651.0	-	8651.0
BLDG. TOTALS/ ▯		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
128	96,330	2132.5	1463.8	1892.7	-	1927.6	8651.0	8651.0	8651.0	-	8651.0
BLDG. TOTALS/ ▯		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
129	96,330	2132.5	1463.8	1892.7	-	1927.6	8651.0	8651.0	8651.0	-	8651.0
BLDG. TOTALS/ ▯		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
130	96,330	2132.5	1463.8	1892.7	-	1927.6	8651.0	8651.0	8651.0	-	8651.0
BLDG. TOTALS/ ▯		.0221	.0152	.0196	-	.0200	.0898	.0898	.0898	-	.0898
140	8,705	270.5	-	-	219.8	225.5	1675.6	-	-	1471.6	1409.0
BLDG. TOTALS/ ▯		.0311	-	-	.0252	.0259	.1925	-	-	.1691	.1619
141	11,291	351.2	-	-	284.5	292.4	2173.5	-	-	1909.3	1828.0
BLDG. TOTALS/ ▯		.0311	-	-	.0252	.0259	.1925	-	-	.1691	.1619
143	91,910	3122.2	1908.2	2621.9	3153.8	2542.4	3398.7	3398.7	3398.7	3398.7	3398.7
BLDG. TOTALS/ ▯		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
144	3,380	114.6	70.3	96.3	115.9	93.6	125.1	125.1	125.1	125.1	125.1
BLDG. TOTALS/ ▯		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370

ANNISTON ARMY AMMUNITION DEPOT - (EAST END)

BLDG. No.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
146	26,620	902.4	553.7	758.7	913.1	737.4	984.9	984.9	984.9	984.9	984.9
BLDG.	TOTALS/ []	.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
147	14,010	474.9	291.4	399.3	480.5	388.1	518.4	518.4	518.4	518.4	518.4
BLDG.	TOTALS/ []	.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
400	255,667	7694.3	4863.2	6884.2	7881.4	6302.4	13113.4	13114.4	13113.4	13113.4	13113.4
BLDG.	TOTALS/ []	.0341	.0216	.0305	.0349	.0279	.0581	.0581	.0581	.0581	.0581
402	5,193	176.0	108.0	148.0	178.1	143.8	192.1	192.1	192.1	192.1	192.1
BLDG.	TOTALS/ []	.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
409	55,060	924.8	-	-	-	846.0	1454.3	-	-	-	1454.3
BLDG.	TOTALS/ []	.0168	-	-	-	.0154	.0264	-	-	-	.0264
410	27,588	463.5	-	-	-	424.9	728.3	-	-	-	728.3
BLDG.	TOTALS/ []	.0168	-	-	-	.0154	.0264	-	-	-	.0264
411	10,077	341.6	209 6	287.2	345.6	279.1	372.8	372.8	372.8	372.8	372.8
BLDG.	TOTALS/ []	.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
421	14,400	488.2	299.5	410.4	493.9	398.9	532.8	532.8	532.8	532.8	532.8
BLDG.	TOTALS/ []	.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
433	43,200	725.8	-	-	-	665.3	1140.5	-	-	-	1140.5
BLDG.	TOTALS/ []	.0168	-	-	-	.0154	.0264	-	-	-	.0264
501	61,004	3125.5	-	-	-	2482.6	2739.3	-	-	-	2739.3
BLDG.	TOTALS/ []	.0512	-	-	-	.0407	.0449	-	-	-	.0449

ANNISTON ARMY AMMUNITION DEPOT - (EAST END)

BLDG. No.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
502	5,682	176.7	-	-	143.2	147.2	1093.8	-	-	960.8	919.9
BLDG. TOTALS/ []		.0311	-	-	.0252	.0259	.1925	-	-	.1691	.1619
503	5,916	200.6	123.1	168.6	202.9	163.9	218.9	218.9	218.9	218.9	218.9
BLDG. TOTALS/ []		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
S-142	33,694	1142.2	700.8	960.3	1155.7	933.3	1246.7	1246.7	1246.7	1246.7	1246.7
BLDG. TOTALS/ []		.0339	.0208	.0285	.0343	.0277	.0370	.0370	.0370	.0370	.0370
BLDG. TOTALS/ []											
BLDG. TOTALS/ []											
BLDG. TOTALS/ []											
BLDG. TOTALS/ []											
BLDG. TOTALS/ []											
BLDG. TOTAL / []		1,409,194	1,130,066	1,130,066	558,849	1,409,194	1,409,194	1,130,066	1,130,066	558,849	1,409,194
ALL BLDGS.		36,719.9	18,883.4	25,443.5	17,979.8	30,775.5	108,117.2	72,789.8	72,789.8	26,164.1	104,099.
BLDG. TOTALS/ []		.0261	.017	.023	.032	.022	.077	.064	.064	.047	.074

ANNISTON ARMY AMMUNITION DEPOT - (WEST END)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
1	12,608	507.1	-	-	408.8	414.6	1625.1	-	-	1341.0	1433.8
BLDG. TOTALS/Φ		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
2	10,536	423.5	-	-	341.4	346.6	1358.1	-	-	1121.0	1197.9
BLDG. TOTALS/Φ		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
3	852	46.6	33.3	36.0	37.5	37.4	228.1	228.1	228.1	228.1	228.1
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
4	14,732	805.8	576.0	621.7	648.2	646.7	3943.8	3943.8	3943.8	3943.8	3943.8
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
5	17,974	983.2	702.8	758.5	790.9	789.1	4811.6	4811.6	4811.6	4811.6	4811.6
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
7	54,332	2066.0	-	-	-	1541.7	9919.4	-	-	-	8788.8
BLDG. TOTALS/Φ		.0380	-	-	-	.0284	.1826	-	-	-	.1618
8	1,892	103.5	74.0	79.8	83.2	83.1	506.5	506.5	506.5	506.5	506.5
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
9	1,892	103.5	74.0	79.8	83.2	83.1	506.5	506.5	506.5	506.5	506.5
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
10	6,440	352.3	251.8	271.8	283.4	282.7	1724.0	1724.0	1724.0	1724.0	1724.0
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
19	1,700	93.0	66.5	71.7	74.8	74.6	455.1	455.1	455.1	455.1	455.1
BLDG. TOTALS/Φ		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677

ANNISTON ARMY AMMUNITION DEPOT - (WEST END)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
21	16,384	896.1	641.0	691.3	721.2	720.0	4385.3	4385.3	4385.3	4385.3	4385.3
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
22	40,567	2219.0	1586.2	1711.9	1784.9	1780.9	10859.8	10859.8	10859.8	10859.8	10859.8
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
27	40,567	2219.0	1586.2	1711.9	1784.9	1780.9	10859.8	10859.8	10859.8	10859.8	10859.8
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
28	40,567	2219.0	1586.2	1711.9	1784.9	1780.9	10859.8	10859.8	10859.8	10859.8	10859.8
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
46	252	13.8	9.9	10.6	11.1	11.1	67.5	67.5	67.5	67.5	67.5
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
53	30,000	548.3	-	-	411.4	448.8	7146.8	-	-	6579.0	6717.4
BLDG. TOTALS/□		.0183	-	-	.0137	.0150	.2382	-	-	.2193	.2239
55	18,950	1036.6	740.9	799.7	833.8	831.9	5072.9	5072.9	5072.9	5072.9	5072.9
BLDG. TOTALS/□		.0547	.0391	.0422	.0440	.0439	.2677	.2677	.2677	.2677	.2677
75	6,567	264.0	-	-	212.8	216.1	846.5	-	-	698.7	746.7
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
220	5,954	239.4	-	-	192.9	195.9	767.5	-	-	633.5	677.0
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
221	10,121	406.9	-	-	327.9	333.0	1304.6	-	-	1076.9	1150.8
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137

ANNISTON ARMY AMMUNITION DEPOT - (WEST END)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
362	243,760	8861.6	-	-	7535.8	7854.1	14987.8	-	-	14172.4	14351.2
BLDG. TOTALS/□		.0364	-	-	.0309	.0322	.0615	-	-	.0581	.0589
363	12,800	293.1	-	-	-	-	4957.4	-	-	-	-
BLDG. TOTALS/□		.0229	-	-	-	-	.3873	-	-	-	-
S-15	4,500	180.9	-	-	145.8	148.1	580.1	-	-	478.8	511.7
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
S-16	4,500	180.9	-	-	145.8	148.1	580.1	-	-	478.8	511.7
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
S-47	15,422	620.0	-	-	499.7	507.4	1987.9	-	-	1640.1	1753.5
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
S-48	2,800	112.6	-	-	90.7	92.1	360.9	-	-	297.9	318.4
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
S-49	5,720	229.9	-	-	185.3	188.2	737.3	-	-	608.6	650.4
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
S-274	4,518	181.6	-	-	146.4	148.6	582.4	-	-	480.7	513.7
BLDG. TOTALS/□		.0402	-	-	.0324	.0329	.1289	-	-	.1064	.1137
BLDG. TOTAL /□		626,907	202,769	202,769	559,775	614,107	626,907	202,769	202,769	559,775	614,107
ALL BLDGS.		26,446.2	7,928.8	8,556.6	19,571.2	21,681.2	102,022.6	54,280.7	54,280.7	83,888.1	93,603.7
BLDG. TOTALS/□		0.042	0.039	0.0422	0.035	0.035	0.163	0.268	0.268	0.150	0.152

ANNISTON ARMY AMMUNITION DEPOT - (RESTRICTED AREA)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
54	7,494	247.5	-	193.3	207.1	199.5	715.9	-	703.8	689.7	693.2
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
58	12,998	428.9	-	335.3	358.7	345.7	1241.3	-	1220.5	1195.8	1202.3
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
59	35,659	1176.7	-	920.0	984.2	948.5	3405.4	-	3348.4	3280.6	3298.5
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
65	4,718	155.7	-	121.7	130.2	125.5	450.6	-	443.0	434.1	436.4
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
87	3,528	116.4	-	91.0	97.4	93.8	336.9	-	331.3	324.6	326.3
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
88	4,960	163.7	-	128.0	136.9	131.9	473.7	-	465.7	456.3	458.8
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
171	1,600	52.8	-	41.3	44.2	42.6	152.8	-	150.2	147.2	148.0
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
172	5,895	194.5	-	152.1	162.7	156.8	563.0	-	553.5	542.3	545.3
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
380	9,134	301.4	-	235.7	252.1	243.0	872.3	-	857.7	840.3	844.9
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
381	14,578	481.1	-	376.1	402.4	387.8	1392.2	-	1368.9	1341.2	1348.5
BLDG. TOTALS/Φ		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925

ANNISTON ARMY AMMUNITION DEPOT - (RESTRICTED AREA)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
600	11,059	364.9	-	285.3	305.2	294.2	1056.1	-	1038.4	1017.4	1023.0
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
652	10,000	330.0	-	258.0	276.0	266.0	955.0	-	939.0	920.0	925.0
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
654	11,562	381.5	-	298.3	319.1	307.5	1104.2	-	1085.7	1063.7	1069.5
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
658	2,508	82.8	-	64.7	69.2	66.7	239.5	-	235.5	230.7	232.0
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
669	2,236	73.8	-	57.7	61.7	59.5	213.5	-	210.0	205.7	206.8
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
670	4,672	154.2	-	120.5	128.9	124.3	446.2	-	438.7	429.8	432.2
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
673	781	25.8	-	20.1	21.6	20.8	76.6	-	73.3	71.9	72.2
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
675	547	18.1	-	14.1	15.1	14.6	52.2	-	51.4	50.3	50.6
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
676	781	25.8	-	20.1	21.6	20.8	74.6	-	73.3	71.9	72.2
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
677	992	32.7	-	25.6	27.4	26.4	94.7	-	93.1	91.3	91.8
BLDG.	TOTALS/□	.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925

ANNISTON ARMY AMMUNITION DEPOT - (RESTRICTED AREA)

BLDG. NO.	BLDG. SQ. FT.	BLDG. THERMAL ENERGY CONSUMED MBTU YEARLY TOTAL					BLDG. ELECTRICAL ENERGY CONSUMED MBTU YEARLY TOTAL (MBTU = KWH x 0.0116)				
		1	2	3	4	5	1	2	3	4	5
680	24,238	799.9	-	625.3	669.0	644.7	2314.7	-	2275.9	2229.9	2242.0
BLDG. TOTALS/□		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
688	2,894	95.5	-	74.7	79.9	77.0	276.4	-	271.7	266.2	267.7
BLDG. TOTALS/□		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
S-84	3,360	110.9	-	86.7	92.7	89.4	320.9	-	315.5	309.1	310.8
BLDG. TOTALS/□		.0330	-	.0258	.0276	.0266	.0955	-	.0939	.0920	.0925
BLDG. TOTALS/□											
BLDG. TOTALS/□											
BLDG. TOTALS/□											
BLDG. TOTALS/□											
BLDG. TOTALS/□											
BLDG. TOTAL /□		176,194	--	176,194	176,194	176,194	176,194	--	176,194	176,194	176,194
ALL BLDGS.		5,814.7	--	4,545.6	4,863.3	4,687.0	16,828.7	--	16,544.5	16,240.0	16,298.0
BLDG. TOTALS/□		0.0330	--	0.026	0.028	0.027	0.100	--	0.094	0.092	0.093

APPENDIX C

LIST OF REPORTS

LIST OF REPORTS

ENERGY USE SURVEY

Narrative - Volume I, Section 3

Supporting Data - Volume II & III

ENERGY MONITORING AND CONTROL SYSTEMS

Narrative - Volume I, Section 4

Supporting Data - Volume II

BIOMASS SURVEY

Narrative - Volume I, Section 5

Supporting Data - Volume III

CENTRAL BOILER PLANTS

Narrative - Volume I, Section 6

Supporting Data - Volume III

BASEWIDE ENERGY PLAN RECOMMENDATIONS

Narrative - Volume I, Section 7

ECIP PROJECT BROCHURES

Narrative - Volume I, Section 8